

Notice of Allowability

Application No.

10/542,007

Examiner

Edward R. Cosimano

Applicant(s)

BROGARDH, TORGNY

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 07 February 2007.
2. ☒ The allowed claim(s) is/are 1,3-16,18-21 and 23-38.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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1. The Oath/Declaration and replacement Abstract as filed on 11 July 2005 are acceptable to the examiner.
2. Acknowledgment is made of applicant's claim for foreign priority based on an application number SE 0300409-0 filed in Sweden on 13 February 2003. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
3. The set of drawings containing 17 sheets of 19 figures numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 14, 15a, 15b, 16, 17 & 18 as presented in the set of drawings filed on 05 December 2006 are acceptable to the examiner.
4. The following is a statement of reasons for the indication of allowable subject matter over the prior art:

A) the prior art, for example:

(1) Okada et al (4,670,849) discloses a machine/process that provides the useful and beneficial function of modifying the control program for a machine/process is modified to increase the accuracy of a machine/process by removing positional errors. To remove the positional errors, the machine/process is commanded to move to a number of designated measurement positions/locations. At each measurement position/location, the position of the machine relative to the co-ordinate system (CO1) of the machine/process for each measurement point are determined and recorded. Further, during each measurement the absolute co-ordinates of the machine relative to a co-ordinate system (CO2) are also determined and recorded. Next, a positional error for each measurement position/location is determined based on a comparison of the acquired positional measurements for both co-ordinate systems CO1 and CO2. Finally, the designated commanded position/location of the machine/process that is contained in the control program is modified based on the determined positional error so that the machine/process may be controlled more accurately to designated positions/locations.

(2) Red et al (4,831,549) discloses a machine/process that provides the useful and beneficial function of correcting positional errors induced by the mechanical components of a robot by using a model of the robot and measured

position data/information to determine a mathematical correction algorithm for correcting the position of the robot.

(3) either Lau et al (WO 97/43703 A1 or 6,269,284) discloses a machine/process that provides the useful and beneficial function of correcting positional errors induced by the mechanical components of a robot by using a model of the robot and measured position data/information to create a correction or calibration or compensation model that is used to correct the position of the robot.

(4) Graham et al (6,256,546) discloses a computer implemented process/machine that under the control of an operating program stored in a computer accessible storage device provides that provides the useful and beneficial function of improving the processing of work pieces, that is objects, by an industrial robot in which the control program for a machine/process is modified to increase the accuracy of a machine/process by removing positional errors. To remove the positional errors, the machine/process through the use of a surface scanning program is commanded to sequentially move to a number of designated measurement positions/locations on an object relative to the coordinate system of the machine/process while measuring and recording positional measurements. Next, for each measurement position/location the measurement position/location and its associated co-ordinates are correlated to a model of the object by mapping each measure position to the corresponding position/location on the nominal model of the object. After performing this mapping, then the positional error/deviation between the co-ordinates of each measurement position/location and the corresponding position/location on the model is determined and optimized. Finally, each of the designated positions of the machine/process that are contained in the control program for the machine/process is modified based on the determined positional error/deviation so that the machine/process may be controlled more accurately to designated positions/locations. It is further noted that the combination of the operating program that is stored within the memory of the machine/process of Graham et al

('546) and controls the operation of the machine/process of Graham et al ('546) would be recognized by one of ordinary skill at the time the invention was made as an implementation of the above teachings on a computer readable media.

(5) either Hawng (2002/0038855) or Woo-Dong (6,509,576) or Watanabe et al (2004/0172168) discloses a machine/process that provides the useful and beneficial function of correcting the operating program of a robot by uploaded corrected program data/information to the robot's controller.

B) however, the prior art does not fairly teach or suggest in regard to claims 1, 18, 19, 37 & 38 a process in claims 1 & 37, a machine in claim 19, and a manufacture/article/machine in claims 18 & 38 that provides the useful and beneficial function of compensating for positional errors by providing a more accurate control program for a robot that corrects designated defined positions for which the robot is to be moved while performing functions/tasks by providing structures in claims 18, 19 & 38 and actions in claims 1 & 37 that perform the functions of:

(1) moving the robot to the each one of the defined measuring points on an object and storing the position of the defined measuring point in the co-ordinate system of the robot;

(2) using a geometric model of the object to determine a plurality of characteristic parameters of the object;

(3) determining the orientation and position of the geometric model relative to the co-ordinate system of the robot by adapting the corresponding points on the geometric model to the defined measuring points;

(4) using the geometric model of the object to determine to which part of the object a defined measuring point belongs;

(5) determining the deviation between a point on the geometric model and the corresponding defined measurement point relative to the co-ordinate system of the robot;

(6) using the determined deviation to adjust the position of the defined measuring point; and

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(7) using the adjusted defined measuring point as part of a control program that is used to control the operation of the robot, to thereby produce a more accurate control program for the robot. Claims 3-16, which depend from claim 1, and claims 20, 21 & 23-36, which depend from claim 19, are allowable for the same reason.

5. Response to applicant's arguments.

5.1 The objections and rejection that have not been repeated here in have been over come by applicant's last response.

6. The examiner has cited prior art of interest, for example:


A) Brogardh (WO 2004/071717 A1 and 2006/01812536) are previous publications of the instant application.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward R. Cosimano whose telephone number is 571-272-0571. The examiner can normally be reached on 571-272-0571 from 7:30am to 4:00pm (Eastern time).

7.1 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow, can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7.2 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ERC
04/20/2007


Edward Cosimano
Primary Examiner